

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 98–NM–224–AD; Amendment 39–12827; AD 2002–14–27]

RIN 2120–AA64

Airworthiness Directives; Fokker Model F.28 Mark 0070, 0100, 1000, 2000, 3000, and 4000 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD), applicable to all Fokker Model F.28 Mark 0070, 0100, 1000, 2000, 3000, and 4000 series airplanes, that currently requires a revision to the Airplane Flight Manual (AFM) that prohibits takeoff in certain icing conditions unless either a tactile inspection is performed or specific takeoff procedures are followed. This amendment requires adding a requirement, for certain airplanes, for modification of the wing leading edge ice protection system to include on-ground wing ice protection, and a new revision to the AFM. This amendment is prompted by the development of a modification that introduces a wing anti-icing system that will operate on the ground as well as in flight. The actions specified by this AD are intended to prevent takeoff with snow, ice, or frost on the critical surfaces of the airplane, which could result in reduced controllability of the airplane.

DATES: Effective August 29, 2002.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of August 29, 2002.

ADDRESSES: The service information referenced in this AD may be obtained from Fokker Services B.V., P.O. Box 231, 2150 AE Nieuw-Vennep, The Netherlands. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Tom Rodriguez, Aerospace Engineer, International Branch, ANM–116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–1137; fax (425) 227–1149.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 94–25–03, amendment 39–9087 (59 FR 62563, December 6, 1994), which is applicable to all Fokker Model F.28 Mark series airplanes, was published in the Federal Register on November 8, 1999 (64 FR 60745). The action proposed to continue to require a revision to the Airplane Flight Manual (AFM) that prohibits takeoff in certain icing conditions unless either a tactile inspection is performed or specific takeoff procedures are followed. The action also proposed to add a requirement, for certain airplanes, for modification of the wing leading edge ice protection system to include on-ground wing ice protection, and a new revision to the AFM.

Since the Issuance of the Notice of Proposed Rulemaking (NPRM)

Fokker Services has issued Proforma Service Bulletin F28/30–032, including Appendix 1, dated December 1, 1999, applicable to Fokker Model F.28 Mark 4000 series airplanes. That proforma service bulletin describes certain corrections regarding the instructions and schematics for the modification of the wiring of the on-ground wing leading edge heating described in Fokker Proforma Service Bulletin F28/30–31 (which was referenced in the NPRM as the appropriate source of service information). Since Proforma Service Bulletin F28/30–032 only provides correction for certain procedures of 1 the modification of the wiring, the FAA has revised paragraph (b) of the final rule to also reference Proforma Service Bulletin F28/30–032. That proforma service bulletin was approved by the The Civil Aviation Authority—The Netherlands (CAA–NL), which is the airworthiness authority for the Netherlands.

Clarification of Applicability

The applicability of the NPRM affects all Model F.28 Mark 0070, 0100, 1000, 2000, 3000, and 4000 series airplanes. However, paragraph (b) of the NPRM specifies that only airplanes identified in Appendix I, Revision 1, dated August 14, 1999, of Fokker Service Bulletin SBF100–30–018, and Appendix I, Revision 1, dated May 4, 1998, of Fokker SB F28/30–031; are subject to the requirements of paragraph (b) of the NPRM. The FAA notes that the effectivity of the proforma service bulletins assigns different operators the actual performance instructions based on a number designated in the Appendix. For example, one airline may be assigned the specific instructions for Appendix I. Therefore, we have revised the applicability of paragraph (b) of the final rule to clarify that Model F.28 Mark 0070 and 0100 series airplanes identified in Appendix I, Revision 1, dated August 14, 1999, of Fokker Proforma Service Bulletin SBF100–30–018; and Model F.28 Mark 1000, 2000, 3000, and 4000 series airplanes identified in Appendix I, Revision 1, dated May 4, 1998, of Fokker Proforma Service Bulletin F28/30–031, Revision 1, dated May 4, 1998; and in Fokker Proforma F28/30–032, including Appendix 1, dated December 1, 1999; are subject to the requirements specified in paragraphs (b)(1) and (b)(2) of this AD, in accordance with the appropriate proforma service bulletin, as applicable.

Public Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

1. Conditional Concurrence

One commenter expresses conditional concurrence with the proposed language of the NPRM. The commenter's concerns regarding certain issues are included in the discussions of other comments below.

2. Requests To Provide an Optional Method of Compliance

Several commenters identified certain concerns with an on-ground wing leading edge heating system. One of these commenters states that the ground wing leading edge anti-ice heating system will not accomplish the intent of the NPRM (i.e., to prevent degradation of aerodynamic lift during takeoff when icing conditions exist). Other commenters point out problem areas that could result, such as:

- Only partial surfaces (i.e., the leading edges) of the wings are heated. The rest of the wing remains unprotected.
- Deicing/anti-icing fluid flow-off may occur, and heating may change the effective holdover time of the fluid.
- Adverse aerodynamic effects from refreezing of runback water (runback ice).
- Risk of leading edge structural damage due to overheating caused by a ground wing leading edge heating system.

The commenters state that other means exist that are equal to or superior to the system proposed in the NPRM, and request that the FAA provide such methods of compliance as alternatives to requiring installation of a ground wing leading edge anti-ice heating system.

The FAA does not agree that the issues specified by the commenters are sufficient to justify not mandating a ground wing leading edge anti-ice heating system. Our specific responses to each of the concerns above are as follows:

- We acknowledge that only the leading edges of the wing are heated. However, we do not agree that heating some of the wing surfaces (i.e., leading edges) will not accomplish the intent of the NPRM. The intent of the NPRM is to ensure that the critical surfaces of the airplane are free from frost, ice, and snow at takeoff. This is accomplished by compliance with the operating rules of §§ 91.527 and 121.629 of the Federal Aviation Regulations (14 CFR 91.527 and 121.629), in combination with the operation of the wing leading edge heating system on the ground.
- We do not agree that operating the wing leading edge heat while on the ground will result in flow-off of fluid. The deicing fluid is typically heated to 60-degrees Centigrade (C) at the spray nozzle and would not be affected by 25-degree-C temperatures of the wing leading edge while being heated on the ground. We acknowledge that there may be some thinning of undiluted anti-icing fluids at the wing leading edge. However, there will be an offsetting benefit of having the wing leading edge heat on, which should delay the failure of the anti-icing fluid by keeping the water component above freezing.
- We do not agree that there is a reason to be concerned over runback ice. For instance, ice melting on the leading edge and water consequently running to another area of the wing and refreezing should not occur, since the on-ground wing leading edge heating system is not intended for deicing purposes. The system should be used in addition to approved deicing or anti-icing procedures. Likewise, turning on the wing leading edge heat to melt ice and not performing deicing procedures is unlikely to occur, since regulations are already in place that prohibit such actions. Therefore, for the purposes of this AD, runback ice and refreezing are not issues of concern.
- We do not agree that there is increased risk of structural damage to the leading edge due to overheating caused by the required heating system. We consider that, since the on-ground leading edge heating system complies with the requirements of § 25.1309 (14 CFR 25.1309), any failures of the heating system, such as overheating of the structure, have been accounted for and substantiated in accordance with the hazard classification of a particular failure.

Based on the FAA's responses above to the commenter's concerns, no change to the final rule is necessary. However, we have revised the final rule to add a specific method acceptable for compliance based on another commenter's request. See the next comment and response below.

3. Request To Approve an Acceptable Method of Compliance

Two commenters request that the FAA approve the AlliedSignal “Contaminants—Fluid Integrity Measuring System,” as an acceptable method of compliance with the requirements of the NPRM. The commenters present the following points in support of their request:

- C/FIMS™ is a FAA-approved system via the Supplemental Type Certification (STC) process.
- C/FIMS™ offers documented evidence as to its capabilities as an ice detector and as a fluid monitoring system, both in laboratory and in-service environments.
- More than 4 years of in-service evaluations have occurred on the Midway Airlines fleet of Fokker Model F.28 Mark 0100 series airplanes.
- Recorded documented performance is available for all weather conditions, including snow, freezing rain, and weather conditions specified as cautionary in AD 94–25–03.
- With the system validated against existing approved procedures including tactile checks and the use of holdover timetables, C/FIMS™ produced absolutely no false annunciations.
- C/FIMS™ installed on Fokker Model F.28 Mark 0100 series airplanes provides effective monitoring of the same surfaces addressed by the service bulletins specified in the NPRM.
- The commenters state that even Fokker Services has recommended that the FAA give serious consideration to certifying C/FIMS™ as an alternative solution, since the leading edge heating system is not universally favored by Model F.28 Mark 0100 series airplanes operators.

We acknowledge that STC ST291CH (applicable to Fokker Model F.28 Mark 0100 series airplanes) approves the installation of the C/FIMS™ as an advisory system that informs the flightcrew if specific anti-icing fluids have failed or if ice or snow has accumulated on one of the ice detectors. That STC also contains instructions to insert Allied Signal Aerospace Canada, Airplane Flight Manual Supplement, Document Number 6C–486, Revision 2, dated August 4, 1999, into the AFM. The AFM Supplement describes how the C/FIMS™ operates when the modification is installed. Certification as an advisory system means that the system cannot be used as the prime means of determining if the airplane must be initially deiced or anti-iced, or if the airplane must be deiced or anti-iced again because a fluid has failed.

However, we have determined that, in combination with a revision to the Limitations Section of the AFM to install the AFM Supplement described above, installation of STC ST291CH on Fokker Model F.28 Mark 0100 series airplanes is acceptable for compliance with the requirement to install an on-ground wing leading edge heating system. Although C/FIMS™ is approved as an advisory system, we find that it will provide additional assurance that the airplane will take off free of snow, ice, or frost on the critical surfaces. This finding is contingent upon using C/FIMS™ in combination with approved procedures for complying with Federal Aviation Regulations 14 CFR 91.527 and 14 CFR 121.629.

Therefore, the FAA has revised the final rule to add a new paragraph (d) of the final rule to specify that installation of a C/FIMS™ in accordance with STC ST291CH and certain AFM revisions required by paragraph (d) of the final rule are acceptable for compliance with the requirements of paragraph (b) of this AD, and constitute terminating actions for the requirements of this final rule.

In addition, we have added a new Note 5 to the final rule to remind operators that accomplishment of the actions specified in paragraph (d) of the final rule does not relieve the requirement that airplane surfaces are free of ice, frost, and snow accumulation as required by §§ 91.527 and 121.629 of the Federal Aviation Regulations (14 CFR 91.527 and 121.629).

4. Request To Withdraw the Proposal

One commenter states that, even with the on-ground wing thermal anti-icing system, operators will have to continue to rely upon using deicing or anti-icing fluids and performing the visual and tactile inspections for icing as the primary procedure for on-ground wing ice protection. Therefore, the commenter argues that there is insufficient improvement provided by the proposed heating system to warrant mandating the on-ground wing ice protection system. The FAA infers that the commenter is requesting that the NPRM be withdrawn.

The FAA does not agree. We acknowledge that operators will still have to rely on fluids and procedures that are necessary for compliance with §§ 91.527 (14 CFR 91.527) and 121.629 (14 CFR 121.629). However, the mandatory tactile inspection required by this AD will be terminated when the on-ground wing anti-ice system is installed. Because of the accident and incident history of these airplanes, we have determined that, although the operations rules (cited above) require that the critical surfaces of the airplane be free from frost, ice, and snow at takeoff, these airplanes require additional measures to ensure safety of flight. Operation of the wing anti-ice system while on the ground is a method to ensure that the critical surfaces of the airplane are free of snow, ice, and frost at takeoff. No change is necessary to the AD in this regard.

5. Request To Allow Credit for Accomplishment of New Service Information

One commenter states that it has accomplished the modification of the wing anti-ice system for operation on the ground, in accordance with Fokker Service Bulletin SBF100–30–018, Appendix I, Revision 1, dated August 14, 1999, rather than the original issuance of the service information as specified in the NPRM. The commenter requests that Revision 1 be specified as an alternative method of compliance.

The FAA agrees that accomplishment of Fokker Service Bulletin SBF100–30–018, Appendix I, Revision 1, dated August 14, 1999, provides an acceptable means of compliance with paragraph (b) of this AD. We have revised paragraph (b) of this AD to include Revision 1 of that service bulletin appendix.

6. Request To Revise Certain Modification Procedures

One commenter states that it is concerned about a safety issue if Fokker Service Bulletin F28/30–031, Appendix I, Revision 1, dated May 4, 1998 (which was specified in the NPRM as an appropriate service information), is accomplished. The commenter explains that accomplishment of that service bulletin would result in the engine anti-ice system being shut off from the operating engine should there be an engine failure during takeoff when the engine anti-ice system has been selected to the “on” position. This same commenter states that, although the commenter has accomplished the modification in accordance with Fokker Service Bulletin F28/30–031, Appendix I, the identified problem was corrected in accordance with additional service information received from Fokker. The commenter requests that the NPRM be revised to reference the corrected modification instructions.

The FAA agrees with the commenter's request for the reasons given by the commenter. As discussed under the header entitled “Since the Issuance of the Proposed Rule,” Fokker Services has issued a new Proforma Service Bulletin F28/30–032, dated December 1, 1999, that describes certain corrective procedures for modifying the wiring for the on-ground wing anti-ice system. Therefore, those corrected procedures have been required in the final rule to clarify the procedures for the modification.

7. Request To Clarify Operating Procedures If the Heating System Is Inoperative

One operator requests that the FAA confirm that current relief specified in the Minimum Equipment List (MEL) for the on-ground heated leading edge system (OGHLES) will remain in effect. Specifically, the operator requests that the FAA clarify that, when the airplane is operated with the OGHLES inoperative, the operating limitations required by AD 94-25-03 should again govern the airplane operation.

The FAA agrees that clarification is needed in this regard. First, as part of that clarification, paragraph (b)(2) of the NPRM, which requires incorporation of Fokker Manual Change Notifications (MCNOs) into the AFM, has been relettered as paragraph (c) of the final rule. Second, we point out that, incorporation of the MCNOs required by paragraph (c) of the final rule allow for alternative takeoff procedures or tactile inspections in the event the on-ground heating system is inoperative. Therefore, no change to the final rule is necessary in this regard.

8. Request To Specify the Modification as Terminating Action

One commenter notes that paragraph (b) of AD 94-25-03 specifies that modification of the thermal anti-ice system, so that it can be operated on the ground in accordance with a method approved by the FAA, constitutes terminating action for the requirements of that AD. However, the commenter also notes that the NPRM proposing to supersede AD 94-25-03 does not contain reference to the terminating action. The commenter suggests adding such reference to Note 3 of the NPRM.

The FAA agrees with the commenter, and has revised this AD to add a statement in paragraph (c) of this AD specifying that accomplishment of the actions required by paragraph (b) and (c) of the AD constitutes terminating action for the requirements of paragraph (a) of the AD.

9. Request To Revise the Cost Estimate

One commenter states that its experience in accomplishing the heating system modification reveals that it takes approximately 400 work hours per airplane to accomplish, as opposed to the estimate of 274 work hours provided in the NPRM.

The FAA acknowledges that the actual work hours necessary to accomplish the required modification exceeds the estimated work hours provided by the NPRM. That estimate of work hours was provided to the FAA by the manufacturer based on the best data available to date. As explained in the NPRM, that estimate is intended to represent the time necessary to perform only the modification required by this AD. We recognize that, in accomplishing the requirements of any AD, operators may incur “incidental” costs in addition to the “direct” costs. However, the cost analysis in AD rulemaking actions typically does not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions. Because incidental costs may vary significantly from operator to operator, they are almost impossible to calculate. However, after considering the information presented by the commenter, we agree that the number of work hours required is higher than previously estimated. Therefore, the cost impact information provided in this final rule has been revised to estimate 400 work hours for accomplishment of the required modification.

10. Request To Revise the Unsafe Condition

One commenter states that it takes exception to the statement of the unsafe condition as presented in the NPRM. The commenter states that, contrary to the statement in the NPRM, no ice protection system (IPS) can “* * * prevent degradation of aerodynamic lift * * *” The commenter

further states that, at best, the proposed modification represents only slight improvements over the present system and procedures. The FAA infers that the commenter is requesting that the statement of the unsafe condition be revised.

The FAA acknowledges that the statement of the unsafe condition should be revised. We agree that deicing and anti-icing fluid will minimally affect the aerodynamic lift and have revised the wording for the unsafe condition to more accurately reflect the description of the unsafe condition. For those sections in the final rule that discuss the unsafe condition, we have eliminated reference to aerodynamic lift and specified that the unsafe condition is to prevent takeoff with snow, ice, or frost on the critical surfaces of the airplane.

11. Request To Revise Icing Related Language

One commenter requests that any icing related language must be accompanied by a specific warning to the flightcrew that no ice protection system can keep an airplane as clean as it was on the day it was certified, and that keeping it clean is the ultimate objective of deicing or anti-icing.

The FAA does not agree that additional warning to the flightcrew is necessary. Although we acknowledge that no ice protection system can keep an airplane absolutely “clean” (i.e., free of ice, snow, and frost), the flightcrew is required by existing operational rules to keep the airplane's critical surfaces free from ice, snow, and frost at takeoff even though a wing leading edge heating system is being operated on the ground. No change to the final rule is necessary in this regard.

12. Request To Emphasize Flightcrew Actions and Procedures

One commenter states that, until technological improvements such as airplane design changes are able to “remove the source of the problem” (e.g., performance degradations due to airframe ice accretions and in-flight encounters with icing conditions), emphasis must be placed on the flightcrew actions, and procedures must be identified to preclude icing encounters that may cause degraded airplane performance.

The FAA does not agree. The intent of this final rule is to prevent airplane takeoff with snow, ice, or frost on critical surfaces, and not to address in-flight icing encounters. Certain other regulations and procedures exist that address in-flight icing encounters. Therefore, no change to this final rule is necessary in this regard.

Conclusion

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Cost Impact

There are approximately 191 Fokker Model F.28 series airplanes of U.S. registry that will be affected by this AD.

The currently required AFM revisions required by this AD take approximately 1 work hour per airplane to accomplish, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the currently required AFM revisions of this AD on U.S. operators is estimated to be \$60 per airplane.

The modification that is required by this new AD action for certain airplanes will take approximately 400 work hours per airplane to accomplish, at an average labor rate of \$60 per work hour. Required parts will cost approximately \$26,585 per airplane. Based on these figures, the cost impact of the modification required by this AD on U.S. operators is estimated to be \$50,585 per airplane.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions.

Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. Section 39.13 is amended by removing amendment 39–9087 (59 FR 62563, December 6, 1994), and by adding a new airworthiness directive (AD), amendment 39–12827, to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "www.airweb.faa.gov/rgl"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2002-14-27 Fokker Services B.V.: Amendment 39-12827. Docket 98-NM-224-AD. Supersedes AD 94-25-03, Amendment 39-9087.

Applicability: All Model F.28 Mark 0070, 0100, 1000, 2000, 3000, and 4000 series airplanes; certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent takeoff with snow, ice, or frost on the critical surfaces of the airplane, which could result in reduced controllability of the airplane; accomplish the following:

Restatement of Requirements of AD 94-25-03, Amendment 39-9087

(a) Within 10 days after December 21, 1994 (the effective date of AD 94-25-03, amendment 39-9087), incorporate the following into the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) (this may be accomplished by inserting a copy of this AD in the AFM):

“Wing De-Icing/Anti-Icing Prior To Takeoff

Caution

The Model F.28 series airplane has a wing design with no leading edge high lift devices, such as slats. Wings without leading edge high lift devices are particularly susceptible to loss of lift due to wing icing. Minute amounts of ice or other contamination (equivalent to medium grit sandpaper) on the leading edges or upper wing surfaces can cause significant reduction in the stall angle-of-attack. This can increase stall speed up to 30 knots. The increased stall speed can be well above the stall warning (stick shaker) activation speed.

Takeoff shall not be attempted unless the pilot-in-command has ensured that the aircraft surfaces are free of ice, frost, and snow accumulation, as required by §§ 91.527 and 121.629 of the Federal Aviation Regulations (FAR).

In addition, takeoff shall not be attempted when the Outside Air Temperature (OAT) is below 6 degrees C (Centigrade) [42 degrees F (Fahrenheit)]; and either the difference between the dew point temperature and OAT is less than 3 degrees C (5 degrees F), or visible moisture (rain, drizzle, sleet, snow, fog, etc.) is present, unless the operator complies with either Option 1 or Option 2 below:

Option 1

The leading edge and upper wing surfaces have been physically checked for ice/frost/snow and the flight crew verifies that a visual check and a physical (hands-on) check of the leading edge and upper wing surfaces has been accomplished and that the wing is clear of ice/frost/snow accumulation;
or

Option 2

The following takeoff procedure is used:

Warning

The following technique cannot be used unless the pilot-in-command has ensured that the aircraft surfaces are free of ice, frost, and snow, as required by §§ 91.527 and 121.629 of the FAR.

- (All Marks, except Mark 0100 and Mark 0070) When using flight director for takeoff, select HDG mode and 10 degrees pitch attitude.
- Select the largest flap setting that is permissible for the takeoff weight/altitude/temperature conditions.
- (All Marks, except Mark 0100 and Mark 0070) Use rated takeoff thrust.
- (Mark 0100 and Mark 0070) Use takeoff/go-around (TOGA) thrust.
- Do not use flexible thrust.
- At V_R rotate slowly (less than 3 degrees per second) to 10 degrees pitch attitude.
- When positively climbing, select gear UP.
- Do not exceed 10 degrees pitch until airspeed is above $V_2 + 20$ KTS.
- When above $V_2 + 20$ KTS, slowly increase the pitch attitude, keeping the speed above $V_2 + 20$ KTS.
- Retract the flaps at or above $V_{FR} + 20$ KTS.

Notes to Option 2

1. The available field length must be greater than or equal to 120 percent of the takeoff distance required by regulation for the actual gross weight. Also, the 20 percent increase in takeoff distance must be accounted for in the obstacle clearance analysis. Weight must be off-loaded, if necessary, to meet these conditions.

2. (Mark 0100 and Mark 0070) Do not follow the Flight Director pitch command during rotation for takeoff and initial climb, as this will result in exceeding the recommended maximum pitch angle of 10 degrees before reaching the speed of $V_2 + 20$ KTS.

3. (Mark 0100 and Mark 0070) Do not engage the autopilot until leaving the Automated Flight Control and Augmentation System (AFCAS) takeoff (TO) mode.

4. For the case of an engine failure, refer to the applicable procedure in Section 4.17.01 Single Engine Operation of the F.28 Mark 0100 (Fokker 100) and F.28 Mark 0070 (Fokker 70) AFM, or Section 1.7.4 Operation Under Abnormal Conditions of the F.28 FHB, as applicable.

5. During takeoff, the first indication of wing contamination will probably be airframe buffet when the pitch angle is increased above 10 degrees, followed by wing drop and insufficient climb rate. Do not exceed 10 degrees pitch until airspeed is above $V_2 + 20$ KTS.”

This action is required until the requirements of paragraph (c) of this AD are accomplished, or the actions specified in paragraphs (d) and (e) of this AD are accomplished.

Note 2: If an operator elects to implement in its fleet only one of the two options specified in this paragraph, the other OPTION does not have to be included in the Limitations Section of the AFM. However, the OPTION that is implemented must be incorporated in the AFM verbatim as it appears in this paragraph.

New Requirements of This AD

Modification

(b) Except as provided in paragraph (d) of this AD: Within 18 months after the effective date of this AD, modify the wing anti-ice system for operation on the ground as specified in paragraph (b)(1) or (b)(2) of this AD, as applicable.

(1) For Model F.28 Mark 0070 and 0100 series airplanes, modify in accordance with Fokker Service Bulletin SBF100–30–018, Revision 1, Appendix I, Appendix 1, dated August 14, 1999.

(2) For Model F.28 Mark 1000, 2000, 3000, and 4000 series airplanes, modify in accordance with Fokker Service Bulletin F28/30–031, Appendix I, Revision 1, dated May 4, 1998; and Fokker Proforma Service Bulletin F.28/30–032, including Appendix 1, dated December 1, 1999; as applicable.

Manual Change Notification (MCNO)

(c) Prior to further flight after accomplishing the modification required by paragraph (b) of this AD, remove the AFM revisions required by paragraph (a) of this AD, and incorporate the flight manual changes specified in Fokker MCNO F100–003, dated September 19, 1997 (for Fokker Model F.28 Mark 070 and 0100 series airplanes); and Fokker MCNO F28–003, dated September 5, 1997 (for Fokker Model F.28 Mark 1000, 2000, 3000, and 4000 series airplanes); as applicable. Accomplishment of the actions specified in paragraphs (b) and (c) of this AD constitute terminating action for the requirements of this AD.

Note 3: Incorporation of the leading edge thermal anti-ice modification and associated operating instructions does not relieve the requirement that airplane surfaces are free of ice, frost, and snow accumulation as required by §§ 91.527 and 121.629 of the Federal Aviation Regulations (14 CFR 91.527 and 121.629).

Acceptable Method of Compliance With the Requirements of Paragraphs (b) and (c) of This AD

(d) For Fokker Model F.28 Mark 0100 series airplanes on which a “Contaminant/Fluid Integrity Measuring System” (C/FIMS”) has been installed in accordance with Supplemental Type Certification ST291CH, as amended on August 20, 1998: Prior to further flight after accomplishment of STC ST291CH, as amended on August 20, 1998, remove the AFM revisions required by paragraph (a) of this AD, and incorporate the following into the Limitations Section of the FAA-approved AFM (This may be accomplished by inserting a copy of this AD in the AFM):

“Wing De-Icing/Anti-Icing Prior To Takeoff

Caution

The Model F.28 series airplane has a wing design with no leading edge high lift devices, such as slats. Wings without leading edge high lift devices are particularly susceptible to loss of lift due to wing icing. Minute amounts of ice or other contamination (equivalent to medium grit sandpaper) on the leading edges or upper wing surfaces can cause significant reduction in the stall angle-of-attack. This can increase stall speed up to 30 knots. The increased stall speed can be well above the stall warning (stick shaker) activation speed.

Takeoff shall not be attempted unless the pilot-in-command has ensured that the aircraft surfaces are free of ice, frost, and snow accumulation, as required by §§ 91.527 and 121.629 of the Federal Aviation Regulations (FAR).

In addition, takeoff shall not be attempted when the Outside Air Temperature (OAT) is below 6 degrees C (Centigrade) [42 degrees F (Fahrenheit)]; and either the difference between the dew point temperature and OAT is less than 3 degrees C (5 degrees F), or visible moisture (rain, drizzle, sleet, snow, fog, etc.) is present; unless the operator complies with Option 1, Option 2, or Option 3.

Option 1

(i) Operate the C/FIMS™ in accordance with AFM Supplement AlliedSignal Aerospace Canada Document Number 6C-486, Revision 2, dated August 4, 1999.

(ii) C/FIMS™ is an advisory system that must not be used as the primary means of determining whether the airplane should be initially deiced or anti-iced or used as the primary means of determining that the fluid has failed.

(iii) C/FIMS™ may be used only for the time periods covered by the deicing/anti-icing holdover time tables. C/FIMS™ may not be used when the holdover time tables have been exceeded; or

If the C/FIMS™ is not operational:

Option 2

The leading edge and upper wing surfaces have been physically checked for ice/frost/snow and the flight crew verifies that a visual check and a physical (hands-on) check of the leading edge and upper wing surfaces has been accomplished and that the wing is clear of ice/frost/snow accumulation; or

If the C/FIMS™ is not operational:

Option 3

The following takeoff procedure is used:

Warning

The following technique cannot be used unless the pilot-in-command has ensured that the aircraft surfaces are free of ice, frost, and snow, as required by §§ 91.527 and 121.629 of the FAR.

- Select the largest flap setting that is permissible for the takeoff weight/altitude/temperature conditions.
- Use takeoff/go-around (TOGA) thrust.
- Do not use flexible thrust.
- At VR rotate slowly (less than 3 degrees per second) to 10 degrees pitch attitude.
- When positively climbing, select gear UP.
- Do not exceed 10 degrees pitch until airspeed is above $V_2 + 20$ KTS.

- When above $V_2 + 20$ KTS, slowly increase the pitch attitude, keeping the speed above $V_2 + 20$ KTS.
- Retract the flaps at or above $V_{FR} + 20$ KTS.

Notes to Option 3

1. The available field length must be greater than or equal to 120 percent of the takeoff distance required by regulation for the actual gross weight. Also, the 20 percent increase in takeoff distance must be accounted for in the obstacle clearance analysis. Weight must be off-loaded, if necessary, to meet these conditions.

2. Do not follow the Flight Director pitch command during rotation for takeoff and initial climb, as this will result in exceeding the recommended maximum pitch angle of 10 degrees before reaching the speed of $V_2 + 20$ KTS.

3. Do not engage the autopilot until leaving the Automated Flight Control and Augmentation System (AFCAS) takeoff (TO) mode.

4. For the case of an engine failure, refer to the applicable procedure in Section 4.17.01 Single Engine Operation of the F.28 Mark 0100 (Fokker 100) AFM.

5. During takeoff, the first indication of wing contamination will probably be airframe buffet when the pitch angle is increased above 10 degrees, followed by wing drop and insufficient climb rate. Do not exceed 10 degrees pitch until airspeed is above $V_2 + 20$ KTS.”

Accomplishment of the actions specified in this paragraph after the installation of STC ST291CH, as amended on August 20, 1998, constitute terminating action for the requirements of this AD.

Note 4: Operators should note that, while Option 1 specified in paragraph (d) of this AD must be incorporated into the Limitations Section of the AFM, operators may elect to incorporate either both or only one of the other two options specified in paragraph (d) of this AD. Only Option 1 and the elected option(s) need to be incorporated into the AFM. However, any option that is incorporated into the AFM must be identical to the option wording specified in paragraph (d) of this AD.

Note 5: Installation of the Contaminant/Fluid Integrity Measuring System (C/FIMSTM) in accordance with Supplemental Type Certification ST291CH, as amended on August 20, 1998, and accomplishment of the actions specified in paragraph (d) of this AD, do not relieve the requirement that airplane surfaces are free of ice, frost, and snow accumulation as required by §§ 91.527 and 121.629 of the Federal Aviation Regulations (14 CFR 91.527 and 121.629).

Alternative Methods of Compliance

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, International Branch, ANM-116. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, International Branch, ANM-116.

Note 6: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the International Branch, ANM-116.

Special Flight Permits

(f) Special flight permits may be issued in accordance with §§ 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Incorporation by Reference

(g) The actions required by paragraphs (b) and (c) of this AD shall be done in accordance with Fokker Service Bulletin SBF100–30–018, Appendix I, Revision 1, dated August 14, 1999; Fokker Service Bulletin F28/30–031, Appendix I, Revision 1, dated May 4, 1998; Fokker Proforma Service Bulletin F28/30–032, including Appendix 1, dated December 1, 1999; Fokker Manual Change Notification MCNO F100–003, dated September 19, 1997; and Fokker Manual Change Notification MCNO F28–003, dated September 5, 1997. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Fokker Services B.V., P.O. Box 231, 2150 AE Nieuw-Vennep, The Netherlands. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Effective Date

(h) This amendment becomes effective on August 29, 2002.

Issued in Renton, Washington, on July 12, 2002.

Lirio Liu-Nelson,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

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